

The first Joint European MRS Chapter Workshop

March 19th-22nd, 2024

Vulpien amphitheater

Odeon Campus

12, rue de l'école de médecine 75006 Paris. France

1st-emrs-chapters@sciencesconf.org



11:30-14:00 Opening ceremony

Tuesday afternoon: Nanomedicine 1

Chaired by Paris MRS Chapter: *Souad Ammar & Yawen Xiao*

- 14:00-14:30 Nanoferrite particle-based immunomagnetic lateral flow assays: How nanomagnetism can improve rapid diagnostic testing
Montserrat Rivas (invited talk)
Depart. of Physics, University of Oviedo. Spain
- 14:30-14:45 Investigation on the Structure of Cu(I) Coordination Compounds and Gold Nanorods as Drug Delivery Systems
Alberto Lopez
Depart. of Science, Roma tre University. Italy
- 14:45-15:15 Glass Nanocarriers for Precision Drug Delivery
Sanjay Mathur (invited talk)
Inorganic Chemistry Institute, University of Cologne. Germany
- 15:15-15:30 Spatial and temporal magnetic MRI monitoring and manipulation of EGFR-directed Chimeric Antigen Receptor T-cell therapy to lung tumors to overcome solid tumor resistance to cellular immunotherapy
Huan Chen (canceled)
MSC, Université Paris Cité. France
- 15:30-15:45 Magnetic plant virus-based nanomaterials: synthesis, characterizations and applications
Nguyet-Thanh Ha-Duong
ITODYS, Université Paris Cité. France
- 15:45-16:00 Tailoring silica nanocarriers to overcome hydrophobic drug challenges: an investigation into enhanced molecular weight and hydrophobicity modulation
Sumiya Iqbal
Inorganic Chemistry Institute, University of Cologne. Germany

16:00-16:30 Coffee break

Tuesday afternoon: Nanomedicine 2

Chaired by Paris MRS Chapter: *Miryana Hemadi & Haziq Nasser Khan*

- 16:30-17:00 Synthetic Magnetosomes for Dual Cancer Therapy: A Chemotherapy and Hyperthermia Approach
Gerardo Goya (invited talk)
 Depart. of Condensed Matter Physics, University of Zaragoza. Spain
- 17:00-17:15 Gold Nanorods: Synthesis, Functionalization and Characterization for Drug Delivery Applications
Simone Amatori
Dept. of Science, Roma tre University. Italy
- 17:15-17:30 Enzyme immobilization on magnetic nanoparticles for polymer synthesis
Francesco Papatola
Dept. of Chemistry & Industrial Chemistry, University of Genova. Italy
- 17 :30-18:00 Selective Nanoheating using magnetic nanoparticles and external AC fields
Maria Del Puerto Morales (invited talk)
Instituto de Ciencia de Materiales de Madrid, CSIC. Spain

Wednesday morning: Inorganic materials for energy

Chaired by Hasselt MRS Chapter: An Hardy & Nele Debusschere

- 9:00-9:30 Co-free Li-rich oxides as cathode for generation 3b batteries
Jordi Jacas Biendicho (invited talk)
Catalonia Institute for Energy Research. Spain
- 9:30-9:45 Molecular preorganization of 2D Materials for sustainable energy application
Veronika Brune
Inorganic Chemistry Institute, University of Cologne. Germany
- 9:45:10:00 Engineering High-Performance Ni-Based Heterofunctional Catalysts for Hydrogen Production in Alkaline Media
Khalil Gaëlle
ITODYS, Universite Paris Cite. France
- 10:00-10:15 CsPbI₃ black phase stabilization probed by in-situ XAFS
Francesco De Angelis
Dept. of Science, Roma tre University. Italy
- 10:15-10:30 Study of the synthesis of copper delafossites for photoelectrochemical CO₂ conversion
Nele Debusschere
Faculty of science, Hasselt University. Belgium

10:30-11:00 Coffee break

Wednesday morning: Carbon-based materials

Chaired by Hasselt MRS Chapter: Veronika Brune & Hendrik Jeuris

- 11:00-11:30 Diamond Materials for Electrochemical Energy Applications

Nianjun Yang (**invited talk**)

Faculty of science, Hasselt University. Belgium

11:30-11:45 Carbon nanodots as active media for tunable laser and random laser applications

Fabrizio Messina

Depart. of Chemistry and Physics, University of Palermo. Italy

11:45-12:00 Carbon-based nanomaterials for glucose analysis

Diébel Dado Sall

ITODYS, Université Paris Cite. France

12:00-12:15 Homogeneous nucleation of nano-diamond particles in microwave microplasma torch

Abdoulaye Siby

LSPM, Sorbonne Paris Nord University. France

12:15-12:30 Nanographene-polysterene nanocomposites as fluorescent unclonable microlabels for anti-counterfeiting applications

Alice Sciortino

Depart. of Chemistry and Physics, University of Palermo. Italy

12:30-12:45 Germanium-Vacancy Centres in CVD Nanocrystalline Diamond Films

Rani Mary Joy

Faculty of science, Hasselt University. Belgium

12:30-14:00 Lunch break

Wednesday afternoon: High Entropy alloys & Nanoalloys

Chaired by Paris MRS Chapter: Hakim Amara & Adrien Moncomble

14:00-14:30 Fabrication of nano-HEA in liquid media

Stephan Barcikowski (**invited talk**)

Duisburg-Essen University

14:30-14:45 Mixing entropy versus surface segregation in high-entropy nanoalloys a computational perspective

Florent Calvo

LIPhy, Grenoble-Alpes University

14:45-15:00 Thermal stability of High Entropy Alloy Nanoparticles: an atomic scale study

Anissa Acheche

LEM, ONERA-CNRS. France

15:00-15:15 In-situ chemical grafting of aminophenyl and RGD peptide on an equimolar high-entropy HfNbTaTiZr alloy: electrochemical behavior and surface characterization

Farzin Arjmand

ITODYS, Université Paris Cite. France

15:15-15:30 Size and shape effect on chemical ordering frustrations in Ni-Pt nanoalloys
Pamela Camilos
CINaM, Aix Marseille University. France

15:30-15:45 Developing new carbon feedstocks and catalysts for SWCNT growth in FC-CVD conditions
Clément Semion
LEM, ONERA. France

15:45-16:00 Design of plasmonic nanostructures with surface lattice for biosensing
Kartikey Pandey
ITODYS, Université Paris Cité. France

16:00-16:30 Coffee break

Wednesday afternoon: Machine learning for material science

Chaired by Paris MRS Chapter: Jaysen Nelayah & Syrine Krouna

16:30-17:00 Unlocking 3D Nanoparticle Shapes from 2D HRTEM Images: A Deep Learning Breakthrough
Riccardo Gatti (invited talk)
LEM, CNRS. France

17:00-17:15 A New Mechanism of Relaxor Ferroelectric System for Neuromorphic Computing
Haoyuan Ma
LSPMS, CentraleSupélec, Paris Saclay University. France

17:15-17:30 Deep Learning Assisted Denoising of in situ Liquid STEM Movies of Nanoparticle Nucleation and Growth
Adrien Moncomble
MPQ, Université Paris Cité. France

17:30-18:00 Machine Learning for single-crystal superalloy design and microstructure modeling
Matthieu Degeiter (invited talk)
DMAS, ONERA. France

18:30-22:30 Seine River Cruise

Thursday morning: Ceramics for a sustainable future 1

Chaired by Cologne MRS Chapter: Sanjay Mathur & David Patrun

9:00-9:30 Compositional and Structural Disorder: Valuable Preparative Tools toward Novel Materials and Enablers for the Circular Economy
Emanuel Ionescu (invited talk)
Fraunhofer IWKS. Germany

- 9:30-9:45 Ceramic Membranes for Alkaline Water Electrolysis
Misgina Tilahun Tsehaye
Flemish Institute for Technological Research. Belgium
- 9:45-10:00 New electrocatalytic for dinitrogen fixation to ammonia
Naina Goyal
Inorganic Chemistry Institute, University of Cologne. Germany
- 10:00-10:15 Rational design of mullite membranes for efficient oil/water separation by combining 3D printing and vapor surface patterning
Hippolyte Dory
Institut Européen des membranes, Montpellier University. France

10:30-11:00 Coffee break

Thursday morning: Ceramics for a sustainable future 2

Chaired by Cologne MRS Chapter: Thomas Fischer & Ziyaad Aytuna

- 11:00-11:30 Advances in 3D printing and functionalization of ceramics: from molecular precursors to 3D designs
Chrystelle Salameh (invited talk)
Institut Européen des membranes, Montpellier University. France
- 11:30-11:45 The study on compound aerogels with controlling the rate of sol-gel reaction
Hae-Noo-Ree Jung
Inorganic Chemistry Institute, University of Cologne. Germany
- 11:45-12:00 Design of novel membrane architectures based on 2D materials and nanofluidic diodes
Mathilde Moderne
Institut Européen des membranes, Montpellier University. France
- 12:00-12:15 Plasma-Enhanced SnO_x Solid Electrolyte Interface for Safer Lithium Metal Batteries
David Patrun
Inorganic Chemistry Institute, University of Cologne. Germany
- 12:15-12:30 BiFeO₃-based Systems used for Pollutants Piezo-photocatalytic Degradation in Water
Nicolò Ghibaudo
Depart. of Chemistry & Industrial Chemistry, University of Genova. Italy

12:30-14:00 Lunch break

Thursday afternoon: European Networking

Chaired by E-MRS Chapters: Souad Ammar, Miryana Hemadi, Christian Ricolleau, Sanjay Mathur, Davide Peddis, An Hardy

14:00-14:30 M-ERA.NET call, an European networking opportunity

Larissa Chaperman

Agence Nationale de la Recherche (ANR). France

14:30-15:00 EU Materials Acceleration Center for Energy & EERA JP-AMPEA

Sawako Nakamae

SPEC, CEA Saclay. France

15:00-16:00 Brainstorming

16:00-16:30 Coffee break

Thursday afternoon: Nanomagnetism 1

Chaired by Genova MRS Chapter: Mauricio Ferreti & Francesco Papatola

16:30-16:45 Synthetic Approaches for Tailored Magnetic Nanocomposites

Pierfrancesco Maltoni

Depart. of Chemistry & Industrial Chemistry, University of Genova. Italy

16:45-17:00 Superspin glass: a useless material

Davide Peddis

Depart. of Chemistry & Industrial Chemistry, University of Genova. Italy

17:00-17:15 Magnetic Polymersome Deformation into Anisotropic Shape by a Static
Magnetic Field

Olivier Sandre

LCPO, Bordeaux University

Thursday afternoon: Poster session

All the invited speakers will be involved in the posters evaluation for the best poster price

19:30-22:30 Gala Diner

Friday morning: Nanomagnetism 2

Chaired by Genova MRS Chapter: Maria del Puerto Morales & Nicolò Ghibaudo

9:00-9:30 Charge-spin conversion and spin-orbit torques in spintronic devices

Pietro Gambardella (invited talk)

ETH Zurich. Switzerland

9:30-9:45 Real Time In-Situ Synchrotron Light Mechanism Exploration of Cobalt Ferrite
and Cobalt(II) Oxide Polyol Synthesis

Miran Baricic

ITODYS, Universite Paris Cite. France

Depart. of Chemistry & Industrial Chemistry, University of Genova. Italy

Depart. of Science, Roma tre University. Italy

9:45-10:00 Ferromagnetic resonance damping in Co/2D material heterostructures

Karen Sobnath

MPQ, Université Paris Cité. France

10:00-10:15 Using modelling and simulation to account for magnetic-driven self-assembly and elongation of nanoparticles during in situ X-ray microscopy in liquid phase
Nathalie Saouli

LSI, Institut Rayonnement Matière de Saclay, CEA. France

10:15-10:30 Spin filtering effects at graphene/molecules interfaces

Linsai Chen

ITODYS, Université Paris Cité. France

MPQ, Université Paris Cité. France

10:30-11:00 Coffee break

Friday morning: High Entropy alloys & Nanoalloys

Chaired by Paris MRS Chapter: Christian Ricolleau & Enrique Manso

11:00-11:30 Tuning hydrogen sorption performances of high entropy alloys: from predictions to experimental validation

Claudia Zlotea (invited talk)

ICMPE, Paris-Est Créteil Val-de-Marne University. France

11:30-11:45 Molecular Strategies for Binary MO₂ (M = V, Sn, Ti, Zr, Hf) High-Entropy Oxides: Superior Catalysts for Enhanced Oxygen Evolution

Ziyaad Aytuna

Inorganic Chemistry Institute, University of Cologne. Germany

11:45-12:00 High entropy nitrides thin films deposited by DC pulsed magnetron sputtering

Mohamed El Garah

ITT Troyes. France

12:00-12:15 Bimetallic Cu-based nanowires and the means to create next-generation stable transparent electrodes

Mona Treguer-Delapierre

ICMCB, Bordeaux University. France

12:15-12:30 Growth of gold-palladium nanoalloys by oblique angle deposition: Exploration of their structure and optical properties

Maël Costes (replaced by a poster)

Institut PPRIME, Poitiers University

12:30-13:00 Closing ceremony